AWIPS PATCH OR OTHER MODIFICATION NOTE 24
(for Electronics Systems Analysts, Information Technology Officers, & AWIPS Focal Points)
Maintenance, Logistics, and Acquisition Division
W/OPS12: JCS

SUBJECT : Enable the frame relay communications between DoD or FAA radars and their host AWIPS system.

PURPOSE : To provide instructions to enable the frame relay communications between DoD/FAA radars and their host AWIPS system.

AFFECTED SITES : The instructions in this AWIPS modification note are mandatory for the AWIPS systems which are designated as the sending site for radar products to the NCF from a DoD or FAA radar. The instructions will be performed following the upgrade of the communications from an X.25 modem connection to a frame relay connection. The Radar Operations Center's schedule for the frame relay installation can be found at http://www.osf.noaa.gov/FrameRelay/Schedule.asp.

PREINSTALLATION REQUIREMENTS :

A. AWIPS Software Release OB3.0 or greater must be installed.

B. In order for the DoD/FAA radar to be ready to accept frame relay communications to the host AWIPS system two things must be done:
   1. RPG Build 5 software (NWS Software Note 24, DoD AF TO 31P1-4-108-618, and FAA Order 6345.1 CHG 49, Chap 45) must be loaded on the appropriate DoD/FAA radar.
   2. After this, an ROC installation team must install a new frame relay hub router and a new module into the existing NWS RPG router at the NWS WFO. The team will load the Distant MSCF software specific to frame relay

AUTHORIZATION : The authority for connection of DoD and FAA radar WSR-88D ORPG Routers to the AWIPS WAN is Request for Change (RC) AB495, approved July 10, 2003.

SECURITY LEVEL : root

ESTIMATED TIME REQUIRED : Approximately 30 minutes to 60 minutes

EFFECT ON OTHER INSTRUCTIONS : None.

VERIFICATION STATEMENT : These procedures were tested and verified at WFOs Fort Worth, TX (FWD), Albuquerque, NM (ABQ), Norman, OK (OUN), New Braunfels, TX (EWX), and San Angelo, TX (SJT).

TECHNICAL SUPPORT : For questions or problems regarding these instructions, please contact the NCF at 301-713-9344.

GENERAL:

This procedure transitions the DoD/FAA radar(s) connection at the sending AWIPS site from the existing X.25 modem and analog telecommunications to a LAN-to-LAN frame relay interface. The existing analog X.25 communications will remain available for at least sixty days after the LAN-to-LAN transition as a backup capability in the event there is an unanticipated, long duration or catastrophic, frame relay outage. This modification note describes how to modify 2 AWIPS configuration files to allow AWIPS to communicate with its associated DoD/FAA radar using the frame relay communications. The 2 configuration files that need to be changed are the `orpgInfo.txt` and `portInfo.txt` files.

When the LAN-to-LAN connection to the DoD/FAA radar is established the AWIPS connection will be shown on the respective DoD/FAA radar(s) Distant MSCF Product Distribution Comms Status (PDCS) screen on line 25. In addition, the LAN-to-LAN connection will enable authorized non-associated NWS AWIPS systems to issue TCP/IP based One Time Requests (OTR) to the DoD/FAA radar across the AWIPS terrestrial WAN (WAN OTR).

With the LAN-to-LAN connection in place RPG Build 5 enables two ports on each RPG for WAN OTR access. The DoD/FAA radar(s) Distant MSCF Product Distribution Comms Status (PDCS) screen will show WAN OTR access on lines 41 and 42, depending on the port the end user is assigned to. Because of the WAN OTR dependence on the LAN-to-LAN connection being operational, all subsequent AWIPS maintenance instructions will attempt to ensure router connectivity is maintained at all times. A separate AWIPS Patch or Other Modification Note will provide additional details about WAN OTR for the respective AWIPS systems.

The LAN-to-LAN connection will enable operations POCs to expand the Routine Product Set (RPS) Lists employed with the DoD/FAA radar to lists comparable to those used with the associated NWS radar.

Pre-installation Guidelines

1. The pre-installation requirements mentioned on the first page must be done before proceeding.
2. Have a copy of the ROC provided OB3 radar file help sheet containing the IP address for the DoD/FAA ORPG. If the OB3 radar file help sheet was not saved, phone the WSR-88D Hotline at (800) 643-3363 and request one be resent.
3. From DS1, ping the new DoD/FAA ORPG IP Address and verify the ping is successful.
4. If pinging the ORPG IP address is successful, call the ROC Hotline at (800) 643- 3363 and the NCF at (301) 713-9344 and provide them with the Radar(s) IDs that will be switched to ORPG connectivity.
5. Check http://www.ops1.nws.noaa.gov/awips_softwre.htm web page for the lessons learned document for this release.
6. Continue normal operations. There is no need to logout of D2D sessions on the workstations or logout of the text workstations.

A. Add the DoD/FAA ORPG IP Address to the `/etc/hosts` file

An entry for the DoD/FAA ORPG should be added to the `/etc/hosts` file on DS1. This entry serves as a placeholder to ensure that the AWIPS IP address being associated with the respective DoD/FAA radar(s) is not inadvertently used for some other purpose.

1. Log into the DS1 server as the `root` user.
2. Change directories to the `/etc` directory.
3. Edit the hosts file and add an entry for the DoD/FAA ORPG. The generic DoD/FAA ORPG entry for the `/etc/hosts` file is:

   999.999.999.999 rrrr-lll

   where ***999.999.999.999*** is the IP address for the DoD/FAA ORPG
   where ***rrrr*** is the 4 letter identifier for the ORPG
   where ***lll*** is the AWIPS site identifier

   As an example, here is the entry for the KGRK ORPG at AWIPS site FWD:

   999.999.999.999 kgrk-fwd # KGRK ORPG

B. Disable the restartRadar entry in the FXA cron on DS1

The `restartRadar` script is invoked every 60 seconds to ensure that the appropriate ORPGCommsMgr and/or wfoApi radar ingest processes are running. Because this procedure changes the interface to the DoD/FAA ORPG from a wfoApi interface to an ORPGCommsMgr interface, it is best to temporarily disable the `restartRadar` process while changing the interface. By disabling the `restartRadar` script, the `restartRadar` script will not erroneously start radar ingest processes while the configuration files are being modified.

1. Log into the DS1 server as the `fxa` user. Type the command:

   `crontab -e`

2. The `crontab -e` command starts the vi editor to edit the `fxa` user crontab file. Locate the line which starts the `restartRadar` script and comment out this line by placing a # character at the beginning of the line. The entry should be changed from:

   `* * * * * csh -c '${FXA_HOME}/bin/restartRadar'`

   to:

   `#* * * * * csh -c '${FXA_HOME}/bin/restartRadar'`

3. Save the modified `fxa` user crontab file and exit the vi editor.

C. Compute the wfoApi port number for the DoD/FAA ORPG

In order to identify the wfoApi process which communicates with the DoD/FAA ORPG, you must determine the ORPG's Simpact port number. This port number will be used to terminate the wfoApi and syncComms processes which communicate with the DoD/FAA ORPG.

1. On DS1, change directories to the `/awips/fxa/data/localizationDataSets/`*`LLL`* directory where *`LLL`* is the AWIPS site ID. List the contents of the `portInfo.txt` file and identify the DoD/FAA ORPG which will be converted from a wfoApi protocol to a ORPGCommsMgr protocol. For example, in the `/awips/fxa/data/localizationDataSets/FWD/portInfo.txt` file at FWD, the entry for the KGRK ORPG is:

   0 1 332 KGRK 50

2. Note the values in column 1 and column 2. The values in column 1 and column 2 will be used to compute the port number by using the following formula:

   (column_2_value X 4) + column_1_value = port_number

   In the example for the KGRK ORPG, the value in column 1 is 0 and the value in column 2 is 1. Using the formula, the port number is calculated to be 4:

   (1 X 4) + 0 = 4

   Save this computed port number because it will be used in part G to terminate the wfoApi and syncComms processes which communicate with the DoD/FAA ORPG.

   In the `portInfo.`txt file, also note the numeric radar ID in column 3. The numeric radar ID will be used in part E to modify the `orpgInfo.txt` file.

D. Instructions for Modifying `orpgInfo.txt` file

The `orpgInfo.txt` configuration file is used by the `/awips/fxa/bin/restartRadar` script to determine whether the wfoApi process or the ORPGCommsMgr process should be started as the communications interface to the ORPG. The `orpgInfo.txt` file is also used by the ORPGCommsMgr process to determine how to communicate with the ORPG.

1. As the `fxa` user on DS1, edit the `/awips/fxa/data/orpgInfo.txt` file. Add the following entry:

   RRRR NNN 999.999.999.999 4489 25 passwd

   where ***RRRR*** is the 4 letter identifier of the ORPG
   where ***NNN*** is the numeric identifier of the ORPG
   where ***999.999.999.999*** is the IP address of the ORPG

   The `orpgInfo.txt` section of the ROC provided OB3 radar file help sheet contains the ORPG specific fields for your AWIPS site.

   As an example, here is the entry for the KGRK ORPG at AWIPS site FWD:

   KGRK 332 999.999.999.999 4489 25 passwd

2. Ensure that the file permissions are correct for the `orpgInfo.txt` file on DS1 by entering the command:

   chmod 644 /awips/fxa/data/orpgInfo.txt

3. Copy the `/awips/fxa/data/orpgInfo.txt` file from DS1 to DS2 by entering the commands:

   ```
   rcp -p /awips/fxa/data/orpgInfo.txt ds2:/awips/fxa/data
   remsh ds2 "chmod 644 /awips/fxa/data/orpgInfo.txt"
   ```

E. Edit the *LLL*-portInfo.txt pre-localization file

The ***LLL*-portInfo.txt** pre-localization file is used by the `./mainScript.csh –radar` localization to create the `/awips/fxa/data/localizationDataSets/LLL/portInfo.txt` file. Although the *LLL*-portInfo.txt file can be stored in either the `/awips/fxa/data/localization/`*LLL* directory or the `/data/fxa/customFiles` directory, it is recommended that the *LLL*-portInfo.txt file be stored in the `/data/fxa/customFiles` directory. If your configuration places the *LLL*-portInfo.txt file in the `/awips/fxa/data/localization/`*LLL* directory, it is recommended that you move the *LLL*-portInfo.txt file to the `/data/fxa/customFiles` directory.

As the `fxa` user on DS1, edit the `/data/fxa/customFiles/`*LLL*-portInfo.txt file. Use the editor of choose and edit *LLL*-portInfo.txt. Change the value in column 5 to 65. The value in column 5 is the maximum number of products which can be requested from the ORPG. For example in the `/data/fxa/customFiles/FWD-portInfo.txt` file, the entry for the KGRK ORPG was changed from:

```
0   1   332   KGRK   50
```

to:

```
0   1   332   KGRK   65
```

F. Run a `./mainScript.csh -radar` localization to create the `portInfo.txt` file

The `./mainScript.csh -radar` localization will use the modified `/data/fxa/customFiles/LLL-portInfo.txt` file to create an updated `/awips/fxa/data/localizationDataSets/LLL/portInfo.txt` file.

1. As the `fxa` user on the DS1 server, enter the following commands:

   `cd /awips/fxa/data/localization/scripts`
   `./mainScript.csh -radar`

2. Copy the updated `/awips/fxa/data/localizationDataSets/LLL/portInfo.txt` file to DS2 by entering the command:

   `cd /awips/fxa/data/localizationDataSets/LLL`
   `rcp -p portInfo.txt ds2:/awips/fxa/data/localizationDataSets/LLL`

   where ***LLL*** is your AWIPS site ID.

G. Terminate the syncComms and wfoApi processes that communicate with the ORPG

1. Using the wfoApi port number which was computed in section C, enter the command on the DS1 server as the `fxa` user:

   `ps -ef | grep cs_config`*`{port_number}`*` | grep -v grep`

   where ***`{port_number}`*** is the wfoApi port number computed in section C.

   For example using the KGRK wfoApi port number 4 which was computed in section C, the command would be:

   `ps -ef | grep cs_config4 | grep -v grep`

   The **`ps -ef | grep cs_config4 | grep -v grep`** command returns the PIDs for both the syncComms process and the wfoApi process which communicates with the ORPG. In the example for the KGRK ORPG, the 5717 PID is returned for the syncComms process and the 26008 PID is returned for the wfoApi process:

```
fxa 26008  5717  0  Apr  3  ?  7:28 ./wfoApi cs_config4 4
fxa  5717     1  0  Apr  1  ?  0:00 ./syncComms ./syncComms cs_config4 4
```

2. Terminate both the syncComms and wfoApi processes by entering the command:

   `kill -9 `*`{syncComms_PID} {wfoApi_PID}`*

   where ***`{syncComms_PID}`*** is the PID for the syncComms process
   where ***`{wfoApi_PID}`*** is the PID for the wfoApi process

   Using the PID in the example for the KGRK ORPG, the command would be:

   `kill -9 5717 26008`

   Verify that both the syncComms and wfoApi processes have been terminated by re-running the **`ps -ef | grep cs_config`*`{port_number}`*` | grep -v grep`** command.

H. Enable the `restartRadar` entry in the FXA cron on DS1

The `restartRadar` script is invoked every 60 seconds to ensure that the appropriate ORPGCommsMgr and/or wfoApi radar ingest processes are running. In section C the `restartRadar` script was disabled in the FXA `crontab` file so that no additional radar processes would be automatically restarted while the ORPGCommsMgr interface was being configured.

To enable the `restartRadar` entry in the FXA crontab file on DS1, do the following:

1. Log into the DS1 server as the `fxa` user. Type the command:

   `crontab -e`

2. The `crontab -e` command starts the vi editor to edit the fxa user crontab file. Locate the line which starts the `restartRadar` script and uncomment this line by removing the # character at the beginning of the line. The entry should be changed from:

   `#* * * * * csh -c '${FXA_HOME}/bin/restartRadar'`

   to:

   `* * * * * csh -c '${FXA_HOME}/bin/restartRadar'`

3. Save the modified fxa user `crontab` file and exit the vi editor.
4. To verify that an ORPGCommsMgr process has been started to communicate with DoD/FAA radar, wait approximately 2 minutes so that the `restartRadar` process will be run and then enter the following command:

   `ps -ef | grep -i RRRR | grep -v grep`

   where ***RRRR*** is the 4 letter identifier of the ORPG

5. Issue a Free Text Message informing all external users that the LAN-to-LAN frame relay interface has been activated between your AWIPS system and the DoD/FAA radar.

Reporting Instructions

Report the completed software installation using the Engineering Management Reporting System (EMRS) according to the instructions in NWS Instruction 30-2104, Maintenance Documentation, Part 4, and Appendix F. Include the following information on the EMRS Report:

Block #	Block Type	Information
5	Description	Enable the frame relay communications between DOD/FAA radars and their host AWIPS system
7	Equipment Code	AWIPS
8	Serial Number	001
15	Comments	Enabled frame relay communications to DOD/FAA radar I.A.W. AWIPS Other Modification Note 24
17a	Mod. No.	SP24

A sample EMRS report is provided as attachment A.

Signature Not Verified

Mark S. Paese

Digitally signed by Mark S. Paese
DN: cn=Mark S. Paese, o=DOC/NOAA/NWS, c=US
Date: 2004.06.16 08:56:41 -04'00'

Mark S. Paese
Director, Maintenance, Logistics, and Acquisition Division

Attachment A - EMRS Report Sample

Attachment A - Sample EMRS Report